

NEWSLINE

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New frontiers in computer simulation

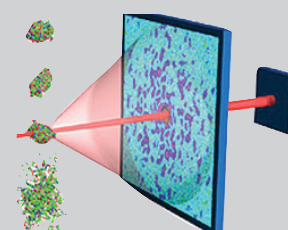
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LAB NEWS

Lab’s Budnitz and van Bibber named AAAS fellows

By Anne M. Stark
Newsline staff writer

Robert Budnitz and Karl van Bibber of the Laboratory have been named fellows of the American Association for the Advancement of Science (AAAS). Election as a fellow is an honor bestowed upon AAAS members by their peers.

This year’s AAAS Fellows will be announced in the AAAS News & Notes section of the Nov. 24 edition of the journal *Science*.

In the Engineering section, Budnitz was selected for distinguished contributions to understanding the safety of nuclear power reactors and of deep geological radioactive waste repositories, with emphasis on probabilistic safety analysis.

Budnitz, who started at the Lab in late 2002, has worked in the nuclear power reactor safety field for 30 years. Upon arriving at the Laboratory, Budnitz had a two-year assignment in Washington D.C. to work on the Yucca Mountain project. Since his return to Livermore, he has continued his Yucca Mountain work and his reactor safety work including traveling internationally to assess and make safety recommendations to eastern European nations about their Soviet-designed nuclear reactors. In addition, Budnitz is working on the Department of Energy’s Global Nuclear Energy Partnership (GNEP) initiative.

Prior to LLNL, Budnitz worked as an independent consultant in the nuclear power safety field after stints at the Nuclear Regulatory Commission and Lawrence Berkeley National Laboratory.

“I’m honored to be selected as an AAAS fellow, especially considering that the Lab has so few AAAS fellows, many fewer than it deserves to have,” he said. “It’s



Karl van Bibber



Robert Budnitz

nice to get an award, and nice for the Lab, too.”

In the physics category, van Bibber was elected for distinguished contributions to the field of astrophysics and particle accelerator physics, particularly for his efforts in the search for dark matter axions.

Van Bibber, a 21-year Lab veteran, is co-leader of LLNL’s Axion Dark Matter Experiment (ADMX) in which scientists are utilizing a microwave cavity in an intense magnetic field to detect the axion, an elusive particle that if discovered, will help determine how much of dark matter is made up of these particles, how our galaxy came together, and the nature of quantum physics on macroscopic scales.

Previously, van Bibber began LLNL’s High Energy Physics & Accelerator Technology Group in 1991 and led it for 10 years, when he became chief scientist for the Physics and Advanced Technologies Directorate. He was

the LLNL leader for the construction of the SLAC/LBNL/LLNL B Factory project, initiated the Lab’s involvement in the R&D and construction of the Linac Coherent Light Source (LCLS) project at SLAC, and led the Lab’s participation in the U.S. research and development consortium for the International Linear Collider. Most recently, van Bibber joined the Laboratory Science and Technology Office as the deputy director for the Laboratory Directed Research & Development program.

“I was stunned when I received the letter,” van Bibber said. “It’s a singular honor, and particularly gratifying as it’s a reflection of how very distinguished members of the physics community regard one’s own career-long contributions to the field.”

This year 449 members have been awarded this honor by AAAS because of their scientifically or socially distinguished efforts to advance science or its applications. New fellows will be presented with an official certificate and a gold and blue (representing science and engineering, respectively) rosette pin on Saturday, Feb. 17, at the Fellows Forum during the 2007 AAAS annual meeting in San Francisco.

The tradition of AAAS Fellows began in 1874. Currently, members can nominate for the rank of fellow if nominated by the steering groups of the association’s 24 sections, or by any three fellows who are current AAAS members (so long as two of the three sponsors are not affiliated with the nominee’s institution), or by the AAAS chief executive officer.

The AAAS council makes the final selections from the list of those nominated.

Amendt and Collins named American Physical Society fellows

By Bob Hirschfeld
Newsline staff writer

Two Lab researchers — Peter Amendt and Gilbert (Rip) Collins — have been named 2006 fellows of the American Physical Society (APS).

Amendt, who has been at LLNL since 1989, was honored for “seminal contributions to the development of indirectly-driven single- and double- shell inertial confinement fusion physics necessary for the demonstration of laboratory-scale ignition.”

His work involves designing and interpreting implosion experiments that have been fielded on the Nova and Omega laser facilities over the past 12 years.

According to Amendt, “These experiments addressed some key physics questions and capsule performance issues which help to increase our confidence in achieving ignition on the NIF beginning in 2010. The double-shell targets are intended as a backup ignition option to the baseline cryogenic single shells if called upon.”

Collins, of V Division in the Physics and Advanced Technologies Directorate, was honored for “seminal contributions to the field of high-energy-density physics related to the development and application of novel laser-compression capabilities to measuring ultra-high pressure



Peter Amendt



Gilbert (Rip) Collins

material properties.”

Collins, a 17-year veteran at LLNL, explains, “It turns out that materials at pressures of many millions of atmospheres are predicted to have quite exotic properties. However, achieving such extreme conditions in the laboratory is quite difficult. Thus a few years ago, we set out to use high energy density facilities to explore material physics at super high pressures and densities. Indeed, the journey has been and continues to be quite exciting.”

Both Amendt and Collins were elected through APS’s Division of Plasma Physics.

APS also announced that Lab physicist Kim Budil won election to the organization’s Panel on Public Affairs.

Budil is currently the associate B program leader for Science, Technology and Experiments in the Defense and Nuclear Technologies directorate.

Based on two years at NNSA headquarters, where she managed the material properties program within the Office of Defense Science in Defense Programs, Budil says, “My time in Washington D.C. made me acutely aware of the need for scientists to participate in the public discussion and to help the public and policy makers understand and appreciate science and technology, as well as to make connections between the research being done today and the benefits that will be accrued from it over time.”

In other recent APS developments involving LLNL, James Wilson was named the winner of the 2007 Hans A. Bethe Prize for his work in nuclear astrophysics and numerical work on supernovae core collapse, neutrino transport and shock propagation.

And earlier this year, Cherry Murray, the Lab’s Deputy Director for Science & Technology, was elected APS vice president for 2007 and will ascend to the organization’s presidency the following year.

LAB NEWS

Capturing nanoscale images with the X-ray laser

By Anne M. Stark
Newsline staff writer

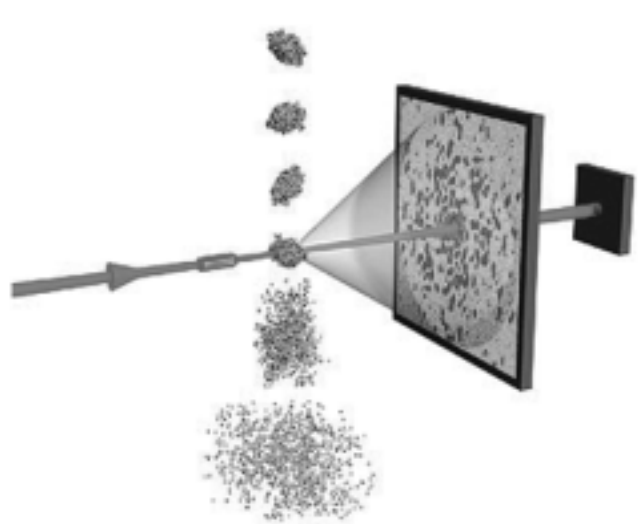
Laboratory scientists for the first time have validated the idea of using extremely short and intense X-ray pulses to capture images of objects such as proteins before the X-rays destroy the sample.

At the same time, the team also established a speed record of 25 femtoseconds for flash imaging.

The new method will be applicable to atomic-resolution imaging of complex biomolecules when even more powerful X-ray lasers, currently under construction, are available. The technique will allow scientists to gain insight into the fields of materials science, plasma physics, biology and medicine.

Using the free-electron laser at Deutsches Elektronen-Synchrotron (DESY) in Hamburg, Livermore scientists, as part of an international collaboration led by LLNL’s Henry Chapman and Janos Hajdu of Uppsala University, were able to record a single diffraction pattern of a nanostructured object before the laser destroyed the sample. A Livermore-developed computer algorithm was then used to recreate an image of the object based on the recorded diffraction pattern. This “lensless” imaging technique could be applied to atomic-resolution imaging because it is not limited by the need to build a high-resolution lens. The flash images could resolve features 50 nanometers in size, which is about 10 times smaller than what is achievable with an optical microscope.

Theory predicts that a single diffraction pattern may be recorded from a large macromolecule, a virus or a cell with an ultra-short and extremely bright X-ray pulse before the sample explodes and turns into a plasma. This means that scientists could better understand the structure of macromolecular proteins without crystallizing them and thus allow rapid study of



Single-molecule diffractive imaging with an X-ray free-electron laser.

all classes of proteins.

Livermore scientists, along with colleagues at Uppsala University in Sweden, DESY, Technische Universität Berlin, the Center for Biophotonics Science and Technology at UC Davis, Stanford Synchrotron Radiation Laboratory, and private firm Spiller X-ray Optics of Livermore, conducted the first experimental demonstration of this theory.

Computer simulations based on four different models suggest that a near-atomic resolution structure could be achieved by well-thought out choice of pulse length and intensity of X-ray wavelength before the sample is stripped of its electrons and is destroyed. However, up until now, there had been no experimental verification of the technique.

The experimental demonstration of “flash diffractive imaging” uses the first soft X-ray FEL (free electron laser) in the world located at the FLASH facility at DESY. FLASH generates high-power soft X-ray pulses by the principle of self-amplification of spontaneous emission. The pulses are 10 million times brighter than today’s brightest X-ray sources, synchrotrons. In addition, this experiment showed that it only takes a 25-femtosecond pulse duration to capture the image.

There has been a question whether the diffraction pattern recorded under these circumstances could be reconstructed to obtain undamaged sample information.

“These results could become a standardized method,” Chapman said. “This imaging could be applied at the cellular, sub-cellular and down on to single molecule scale.”

Other Livermore authors include Anton Barty, Michael Bogan, Sebastien Boutet, Matthias Frank, Stefan Hau-Riege, Stefano Marchesini, Bruce Woods, Sasa Bajt, Henry Benner, Richard London, Richard Lee and Abraham Szoke. The work was funded by a Laboratory Directed Research and Development strategic initiative proposal for “biological imaging with fourth-generation light sources.”

The research appears in the Nov. 12 online edition of *Nature Physics*. It will appear on the cover of the December hard copy issue of *Nature Physics*.

This research was funded in part by the National Science Foundation’s Center for Biophotonics Science and Technology (CBST) headquartered at the UC Davis Medical Center. CBST is a multi-institutional research center established in 2002 by LLNL and UC Davis researchers.

Terascale Simulation Facility receives federal award

By Deanna Willis
Computation

The Terascale Simulation Facility (TSF) Project has won the DOE Secretary’s Project Management Award of Achievement.

The Project Management Awards are presented annually to three teams who demonstrate outstanding performance based on overall management and successful completion of a project.

Anita Zenger, the Lab’s TSF project manager, accepted the award on behalf of the TSF team during a DOE conference for contractor project managers and federal project directors in Alexandria, Va. on Nov. 15.

Clay Sell, deputy secretary of energy, presented the awards; and Linton Brooks, admin-

istrator of the National Nuclear Security Administration (NNSA), also attended.

“It is always important and enjoyable to see excellence recognized,” Brooks said. “Because so many people in NNSA perform so well, I get to do that a lot. But it may be particularly important in the area of project management. Probably no single thing hurts the department’s overall reputation more than the persistent belief that it cannot manage (and in some cases cannot even complete) large-scale projects. Thus, it was particularly gratifying to me to see our projects cited in this important area.”

The TSF is a 253,000-square-foot facility that houses world-class supercomputers and

more than 250 staff. The facility designers had to carefully consider and balance safety, efficiency, and the need for flexibility to address changing computing technology. Innovations in the TSF’s design include heating and cooling for demanding computer systems, advanced computer cooling capabilities, highest achievable clear space, and effective use of natural lighting for offices. The building was completed in late 2004, eight months ahead of schedule and \$1.2 million under budget.

“I am proud that the team produced a computing asset for the Lab that is second to none,” said Barbara Atkinson, the TSF team’s Computation Directorate management liaison. “(The TSF) positions our Lab well for the future.”

Simulations win prestigious Bell Prize

By Don Johnston
Newsline staff writer

“Our goal is to make nuclear testing a true anachronism,” said Advanced Simulation and Computing (ASC) Program Director Dimitri Kusnezov during the October 2005 ceremony dedicating two of the world’s fastest supercomputers in the Laboratory’s Terascale Simulation Facility.

In the year since that ceremony, BlueGene/L and ASC Purple have delivered on their promise to usher in a new era of “predictive simulation” by achieving milestones for the ASC Program, which NNSA Administrator Linton Brooks has called “the glue that holds stockpile stewardship together.”

The two massively parallel computing systems, developed in collaboration with IBM, continued to garner awards for breakthrough three-dimensional (3D) science simulations and systems performance at Supercomputing 2006 (SC06), the premier international high performance computing conference held in Tampa, Fla. this year.

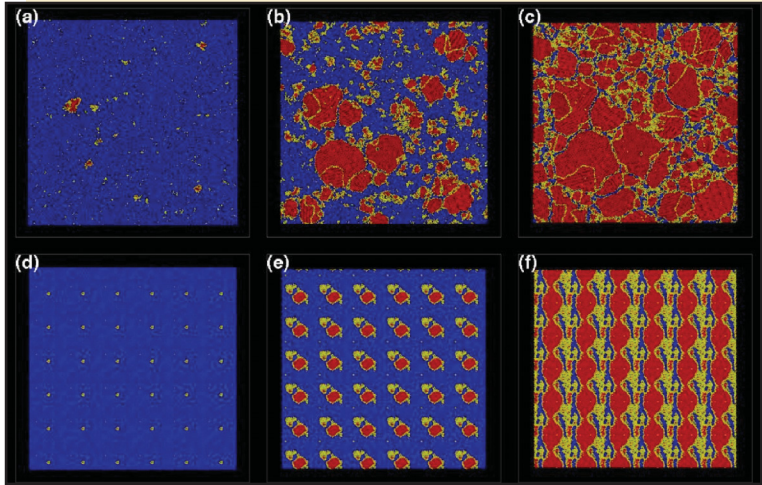
BlueGene/L (BGL) retained its ranking as the world’s fastest computer on the industry standard Top500 list of the world’s fastest supercomputers released Nov. 13 at the start of SC06. ASC Purple, slipped to fourth on the list from third. NNSA and DOE supercomputers led the Top500 with five of the top 10 systems (see accompanying chart).

For the second straight year, a Laboratory-led team was awarded a Gordon Bell Prize in the “Peak Performance” category for a materials science simulation conducted on BGL. Named for one of the founding fathers of supercomputing, the prestigious Gordon Bell Prize — the Oscar for supercomputing — is awarded to innovators who advance high-performance computing. An LLNL physicist also played a role in a second Gordon Bell Prize awarded this year for “Special Achievement,” also a BGL application.

“To see the Laboratory’s leadership role recognized by the international high performance computing community is very gratifying and underscores the importance DOE and NNSA attach to advancing scientific computing,” said Dona Crawford, associate director for Computation. “These awards also demonstrate the importance of our collaboration with partners from industry and academia, and the global impact of the research we conduct.”

Breakthrough simulations

Led by Francois Gygi, formerly of the Lab and currently at UC Davis, LLNL’s peak performance team included: Erik Draeger, Martin Schulz and Bronis de Supinski of LLNL’s Center for Applied Scientific Computing; John Gunnels, Vernon Austel and James Sexton, IBM’s TJ Watson Research Center; Franz Franchetti, Carnegie Mellon University; and Stefan Kral, Christoph Ueberhuber and Juergen Lorenz, Vienna University of Technology’s Institute of Analysis and Scientific Computing (Austria). Their entry was titled “Large Scale Structure Calculations of High-Z Metals on the BlueGene/L Platform.”



Snapshots from simulations of solidification in tantalum. These simulations earned a Lab team the 2005 Gordon Bell Prize for Peak Performance. The top sequence displays nucleation (a) and growth (b) occurring in a 16,372,000-atom simulation, resulting in a realistic distribution of grains and grain boundaries (c). The same process modeled using 64,000 atoms (d-f) produced the artificial final structure shown in (f).



The Advanced Simulation and Computing Program’s booth at SC06 in Tampa, Fla. where scientists from Los Alamos, Sandia and Livermore made presentations about their work.

BlueGene/L tops computer ranking



Mark Seager accepts the certificate for the world’s fastest supercomputer, BlueGene/L,during announcement of the newTop500 list in Tampa, Fl.

Rank	Computer
1	LLNL BlueGene/L — eServer Blue Gene Solution
2	Red Storm — Sandia/ Cray Red Storm
3	BGW — eServer Blue Gene Solution IBM
4	ASC Purple — eServer pSeries p5 575 1.9 GHz IBM
5	MareNostrum — BladeCenter JS21 Cluster, IBM, Barcelona, Spain
6	Thunderbird — PowerEdge 1850, 3.6 GHz, Infiniband Dell, Sandia
7	Tera-10 — NovaScale 5160, CEA, France
8	Columbia — SGI Altix 1.5 GHz, NASA Ames
9	TSUBAME Grid Cluster, Tokyo, Japan
10	Jaguar — Cray XT3, Oak Ridge National Laboratory

Supercomputing pioneer honored

George Michael, a retired Laboratory computational physicist, was honored in the opening ceremony of Supercomputing 2006, the premier international supercomputing conference he was instrumental in founding, held this year in Tampa, Fla.

Bill Kramer, exotic technologies chair for this year’s conference, presented a special award recognizing Michael as a founder of the annual high performance computing community gathering, which brings together researchers from national labs, government research institutions, academia and industry from around the world. Michael’s daughter, Karen Tootle of LLNL’s Computation, accepted the award on her father’s behalf.

Michael retired from the Laboratory in 1992 but remained active in the supercomputing conference until very recently. Hired at Livermore in April 1953 as a physicist, Michael helped define computational physics as a discipline. When he first started at LLNL he served as a liaison between physicists and “coders” or computer programmers. “Then the lure of computation overcame me,” Michael recalls.

In 1981, he instigated the first Salishan conference,



George Michael

now an annual gathering of leaders in high-performance computing that meets at the Salishan resort in Oregon.

Michael’s success with that conference led Bob Borchers, associate director for Computation in the late 1980s, to ask him to organize the first supercomputing conference in 1988, held in Orlando, Fla. The first conference was attended by about 1,400 people, a number that has grown today to nearly 10,000.

The annual conference is held under the auspices of the Institute of Electrical and Electronics Engineers’ (IEEE) Computer Society and the Association for

Computing Machinery (ACM).

Supercomputing’s success over the years has been due to the conference’s founding organization and structure, which encourages dynamism and creativity, according to Michael.

He says he feels privileged to have been a part of computational history during his career. “It was really a lot of fun. We were breaking new ground all the time,” Michael said.

At 80, Michael remains passionate about computation and now devotes his time to a Website dedicated to a history of computing at LLNL, describing innovations that have been overlooked.

was awarded the 2005 Gordon Bell Prize for sustaining more than 100 teraFLOP/s (trillion floating operations per second) on the machine. In April of this year, Qbox set a record for a scientific application with a sustained 207.3 teraFLOP/s. BGL also has run another first principles code investigating high explosives, super-ionic water and carbon graphite-to-diamond transitions — simulations of importance to NNSA scientists.

An IBM/Laboratory team at SC06 also swept all four High Performance Computing Challenge benchmark awards for “best performance” and shared the “productivity” award with teams from MatLab and MIT. Tom Spelce of Computation accepted the awards on behalf of the LLNL teams.

ASC Purple comes of age

ASC Purple, the 100-teraFLOP/s system designed to simulate nuclear weapons performance, also has exceeded expectations with early delivery of milestones for stockpile stewardship. In January and February of 2006, a joint team of scientists from Lawrence Livermore and Los Alamos national labs performed a series of weapon simulations at unprecedented spatial resolution, utilizing the most advanced ASC simulation software.

These simulations point to phenomena not seen at lower spatial resolutions and give new insight into weapons physics. Such detailed modeling was not practical on any previous computer architecture due to both time and memory constraint. But

Purple, and its successors, will enable significant enhancements in both understanding and weapon simulation capability.

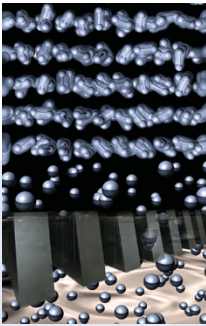
The advent of 100-teraFLOP/s systems is ushering in a new era of “predictive simulation” in high performance computing. Predictive simulations allow researchers to understand how complex physical, chemical and biological systems behave over time — such as how nuclear materials age — where it was previously only possible to get brief snapshots at a smaller scale.

Supercomputing leadership

The Laboratory has played a leadership role in the annual supercomputing conference since its inception in 1988. In this year’s opening plenary session, retired Lab computer scientist George Michael was honored as one of the conference’s founders (see accompanying article).

The theme for SC06, “Powerful Beyond Imagination,” was inspired by Albert Einstein’s observation that: “Computers are incredibly fast, accurate and stupid; humans are incredibly slow, inaccurate and brilliant; together they are powerful beyond imagination.”

On the cover: This composite image shows BlueGene/L in a simulation image displaying condensed matter subjected to high temperatures and pressures. Performance test runs on BlueGene/L with newly optimized matrix-multiply routines shows the Qbox code can achieve improved efficiency compared to earlier runs studying molybdenum atoms at ambient pressures. Image credit: Liam Kraus





THE HOME PAGE

Campaign seeks to bring HOME record participation

By Linda Lucchetti
Newsline staff writer

Editor's note: Sheryl Goodman, Rita Brown, Sarah Wenning and Cindy Gardner are the 2006 HOME Campaign co-chairs, representing the sponsoring directorates, Administrative and Human Resources Directorate (AHRD) and Biosciences Directorate (now part of Chemistry, Materials and Life Sciences Directorate). As the campaign winds down, preparing to close on Dec. 8, they share some thoughts about this year's HOME Campaign.

Each year's HOME Campaign is unique, bringing with it a varied set of circumstances and challenges. Last year, Hurricane Katrina prompted the concerns of Lab employees who focused early on helping those far from their own neighboring community.

This year, employees' concerns are closer to home, with the contract competition process and transition period ahead. With these thoughts in mind, this year's campaign goal was to increase participation.

"It was decided that this year's goal was to focus on the number of employees contributing, rather than the number of dollars collected," Sheryl Goodman, AHRD Operations manager, said. "We set this goal believing that with participation, the dollars would follow."

Directorates use various methods to inspire their employees to participate in the campaign. For example, Goodman said that AHRD recently hosted a speaker from the Valley Humane Society during an all-hands meeting for employees and then offered refreshments to attendees.

Although the co-chairs were donors in previous HOME campaigns, this year, they took on additional responsibilities, serving as leaders for a committee of 22 volunteers whose mission was to heighten the awareness and execute the many facets of the campaign.

"As a donor, you often take for granted all the effort and coordination that it takes to run a campaign like this every year," Goodman said.

Rita Brown, AHRD senior financial manager, believes that the variety and number of agencies represented in the HOME Campaign list motivate employees. "At the onset, we wanted to stress to employees that there's something here for everyone. There's a particular agency that might represent a cause close to your heart that needs your help."

The co-chairs believe that the HOME Campaign offers an avenue to give back to the community and to those less fortunate.

"Although there may be other methods to contribute to charities, the Lab's HOME Campaign is a convenient way for employees to make a difference. And, what could be easier than going online where you can select an agency, click and make your pledge," Cindy Gardner, associate director resource manager, said.

The on-line method for giving has definitely enhanced the ease of



Paws for a cause: During the first "At HOME in Our Community" project in July, Lab volunteers helped animals at the East Bay SPCA (Society for the Prevention of Cruelty to Animals) shelter in Dublin.

The overall goal for 2006 is increased participation by each directorate. To see the most current numbers (as of Nov. 30), see <http://home.llnl.gov/donation/index.htm>

contributing. However, hard copy booklets were still available to those employees who wanted them at the start of the campaign.

"I prefer the booklet because it serves as a resource for me all through the year. If a friend or relative needs information or help, I know where to look," Brown said.

The "At HOME in our Community" activities were successful this year as in the past, jump-starting the annual campaign three months prior to its official kick-off — the "Run for HOME" on Oct. 25. "At HOME" has become a tradition, a valuable way not only to feature several agencies, but also to give employees the means to become actively involved. In the past, employees have built houses for "Habitat for Humanity," visited patients at the Livermore Veterans Hospital, and walked dogs at the Tracy Animal Shelter.



Again this year, as part of the "At HOME in our Community" activities, Lab employees generously donated hundreds of backpacks and boxes of school supplies for students in need through Livermore's Jubilee Tri-Valley Youth Center. Here, backpacks are lined-up and ready for the give-away event held in August.

"This year, we talked with our associate directors of the campaign's sponsoring directorates — Elbert Branscomb and Jan Tulk — to learn what types of community outreach they felt passionate about," Goodman said.

Tulk supports projects that supply food to those in need, while Branscomb promotes offering science and math opportunities to disadvantaged students.

Coordinators of the At HOME projects, Nadine Horner and Germaine Clark, worked with local agencies to organize volunteer activities.

"It's wonderful to see Lab employees involved in the "At HOME" projects," said Wenning, deputy division leader, Operations, Biology & Biotechnology Division, CMLS. "For those employees who choose not to donate dollars, the 'At HOME' activities are another way in which they can contribute back to the community."

In July, with "Paws for a Cause" as the motto, volunteers went to the East Bay Society for the Prevention of Cruelty to Animals (SPCA) in Dublin and made toys and beds for the animals and washed windows at the shelter. The August activity brought backpacks and school supplies to local students in need. September's project focused on Camp Arroyo's Science Camp to inspire and motivate camp staff about current bioscience technology.

And during October, "At HOME" stocked Livermore's Open Heart Kitchen by conducting a Lab-wide food drive, topped off by a canned good drive held on the day of the "Run for HOME." It is estimated that Lab employees donated enough items to feed local families in need for two weeks. In addition, volunteers assembled lunches for the Open Heart Kitchen's weekend box lunch program.

The final activity in November was a talk presented by Captain Arnie Brockmire of LLNL's Fire Department, who spoke about his experiences as part of a swift water rescue team in the aftermath of Hurricane Katrina.

Gardner said that the "At HOME" activities serve as an eye-opener to those who volunteer.

"Volunteering gives people a good feeling. It's a great way to get connected to the community and meet other Lab volunteers as well. It would be wonderful if there were Lab volunteers in programs like this throughout the entire year, not just during the HOME Campaign."

Goodman, Brown, Wenning and Gardner thank all those who have given their time and efforts to serve on the 2006 HOME Campaign committee, as organizational team leaders for directorates or as

HOME representatives, as well as the NIF Directorate that coordinated a successful "Run for Home." They are really the unsung heroes.

There's still time to be part of the Laboratory's 2006 HOME Campaign. Help to make a difference in the community. Go to the Web at <http://home.llnl.gov/index.htm> by Dec. 8. Make a pledge and be eligible for the incentive program drawing. You could win a limo ride to the Napa Valley, or a stay at the Hotel Valencia Santana Row.

RETIREES' corner

David Hopkins (Plant Engineering, 1991) just returned from a seven day cruise on the Regent Seven Seas Voyager with stops at Stockholm, St. Petersburg, Helsinki, Finland, Visby, Sweden, and Copenhagen. He then flew to Nice, France for four days and then to England for eight days before boarding the Crystal Serenity for a 66-day cruise around the Mediterranean.

Several people have asked about the 28-day train trip that he took starting in Moscow then across Russia to Volgograd, across Uzbekistan, Kazakhstan and then across China from Jiayuguan to Beijing (the old silk route). This was a once in a lifetime trip. He has many maps from cities around the world if anyone is interested. Email him at davidhopkinsjr@aol.com. He will be in Australia from Nov. 27 to Dec. 22. (See Website for full details).

Jan and Harold Pfeifer (EPD, 1993) just returned from a 26-day trip to Tasmania (Hobart): Australia (Ayers Rock, Alice Station, Darwin, Cairns (Great Barrier Reef), and Sydney); and New Zealand (Christchurch, Queenstown, Ferry between South and North NZ, Wellington and Auckland).

Australia highlights: Tasmanian devils, the Ayres Rock, droms in the outback near Darwin, looking at sea life at the reef, touring Sidney and the Opera House and the harbor bridge with climbers on top, and a harbor dinner cruise and city sights.

New Zealand: Farms, ranches and cities; southern New Zealand has high western, mountain ranges with heavy snow, sheep grazing everywhere, and domesticated deer and elk, both raised for meat, 44 million sheep available for wool, meat, and many scenic attractions in towns. All areas in New Zealand were green

with many rivers and lakes. At the time of travel, Oct. through Nov., Australia was experiencing the worst drought ever. Summary: "Great places see."

Tom Crites (Hazards Control/NAI) retired in June 2004 and completed his first Ironman triathlon in Madison, Wisconsin, September 2004. Tom said that it was a real struggle to finish the 140.6-mile event in the 17 hours allowed. However, he also said that it is one of the most satisfying things he's done. The following year, Tom completed the Ironman event in Coeur d'Alene, Idaho, which he said went much better. He cut an hour off his finish time and didn't start throwing up until mile 18 of the run.

This year, on Nov. 4, he completed the Ironman Florida event in Panama City Beach. The 2.4-mile swim was in the Gulf of Mexico, and Tom reports that, though a number of participants got seasick from the rolling waves, he enjoyed the swim and started the 112-mile bike ride in good shape. The Florida course is very flat, and even with wind, mild temperatures made for a pleasant ride. The marathon, 26.4-miles is always difficult at the end of a day, and Tom finished well after dark, but 20 minutes faster than his previous time. Feeling good at the end of this one, Tom has signed up to do Ironman Canada next year.

There is no retirees luncheon in December. The next one will be Jan. 17. The annual October dinner/dance was very enjoyable. Everyone enjoyed the band and dancing. Send any input to Jane or Gus Olson. E-Mail: AugustO@aol.com or JaneRubert@aol.com. Phone: (925) 443-4349, address: 493 Joyce Street, Livermore, CA 94550. Have a Merry Christmas and a Happy New Year. (Unedited version on the web-page: <http://www.llnlretirees.org/main.html>).

PEOPLE NEWS

IN MEMORIAM

Charles Cook Jr.

Charles Frederick Cook Jr. who retired from the Lab in 1983, died Nov. 9. He was 86.

Born Feb. 21, 1920, Cook had been a Tracy resident for 61 years. He served in the U.S. Army during World War II, Korea and Vietnam, leaving the service with the rank of master sergeant. He later worked for the Tracy Police Department, and then worked at LLNL.

Cook was preceded in death by his wife of 56 years, Betty J. Cook and son, Stephen Paul Cook.

He is survived by his children, Charles F. Cook III and his wife, Brenda of Manteca; Thomas J. Cook, and his wife, Beverly, of Colorado; Gerry C. Werber and her husband, Robert, of Tulsa, Okla., Karen Clayton, and her husband, Marc, of Chester, Okla.; 12 grandchildren and 13 great-grandchildren.

Contributions in Cook's name may be sent to First Presbyterian Church, 101 Berverdor Ave., Tracy, CA 95376.

T. Murray Kavanagh

T. Murray Kavanagh, a Lab retiree, died Nov. 10 in Colorado Springs, Colo. He was 74.

Born in Elrose, Saskatchewan, Canada, he graduated from the University of Saskatchewan and earned a doctorate in nuclear physics from Magill University. He worked in the Lab's Z Division. After retiring in 1997, he lived in Fallbrook, Calif. for seven years before moving to Colorado Springs in 2005.

He is survived by his son Peter Kavanagh of Palmer Lake, Colo.; daughters Heather Warner of Colorado Springs and Judy Thomas of Parker, Colo.; grandchildren Jillian and Kelson Warner and Elle and Anna Thomas; brothers Keith of Kanata, Ontario; and Norwood of Saskatoon, Saskatchewan.

Donations may be made in Kavanagh's name to Pikes Peak Hospice, 825 E. Pikes Peak Avenue, Suite 600, Colorado Springs, CO 80903.

Robert James Horton

Robert James Horton, a Lab retiree formerly of Remer, Minn., died at his home in the Sierra Nevada Mountains in Calif. on Oct. 21. He was 86.

Born on Aug. 26, 1920 on the family farm, he married his classmate Gene Elizabeth Rogers in June 1942. He graduated from the U.S. Air Corps (later the USAF) cadet training in 1943.

After training in single and twin engine planes he was stationed in Karachi, India. He flew "The Hump" — a route over the Himalayas, delivering fuel to troops in China, and returned to India with troops or cargo. He returned to the states and was pro-

moted to captain. He was discharged in 1945. In 1950 he was recalled for the Korean conflict and was stationed in Japan.

Horton was manager of quality assurance for the Lab's Nuclear Test Program until his retirement in 1979. He then continued to work for the Lab as a consultant for 10 years.

He is survived by his wife of 64 years, Gene; sons Bob Horton and Jim Horton; daughter Alexis Hummel; five grandchildren and two great-grandchildren. He was preceded in death by his parents and son Van Michael. Donations may be made in his memory to the American Cancer Society.

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LAB NEWS

NNSA Complex 2030 meetings to seek public comment

A series of meetings to discuss Complex 2030, NNSA's plan for the future of its complex, will kick off the week of Dec. 11.

Complex 2030 calls for a smaller, more efficient complex that can more effectively support a smaller nuclear weapons stockpile. The plan proposes three alternatives that will impact the Laboratory. The first alternative is one of maintaining the “status quo,” with gradual reduction of special nuclear materials from the Superblock. The second alternative proposes consolidations — eventual reconfiguration of NNSA work at Site 300, and removal of Category I/II quantities of special nuclear materials from the Superblock. The third alternative proposes compromises somewhere in between the first and second options.

On Monday, Dec. 11, George Allen, director of the NNSA Office of Transformation, which oversees the Complex 2030 plan, will speak to Site 300 employees from 11 a.m. to noon and to employees on the main site from 2:30 to 3:30 p.m. in the Bldg. 123 auditorium. This meeting also will be broadcast on Lab TV channel 2.

The next day, Dec. 12, the general public will be allowed to comment on the plan at two different meetings. The first meeting takes place from 11 a.m. to 10 p.m. at the Robert Livermore Community Center, 4444 East Ave., in Livermore. The second meeting will be held from 6 to 10 p.m. at the Tracy Community Center, 950 East Ave., in Tracy.

Details on the Complex 2030 plan are available on the Internet at <http://www.com-plex2030.peis.com/project.html>. Comments on the plan also may be submitted via e-mail to Complex2030@nnsa.doe.gov or to Theodore A. Wyka, Complex 2030 Document Manger, Office of Transformation, US DOE, NA-10.1, 1000 Independence Ave, SW, Washington DC 20585. The deadline for comments is Jan. 17, 2007.

DDLs lecture looks at new cancer diagnostics

New technologies for the diagnosis of cancer will be discussed when James R. Heath presents “Nanonsystems Biology and New Technologies for the in Vitro and in Vivo Diagnosis of Cancer,” the next installment in the Director’s Distinguished Lecturer Series.

Director George Miller invites all employees to attend the talk at 3:30 p.m. Tuesday, Dec. 5, in the Bldg. 123 auditorium.

The emerging world of personalized, preventative, predictive and participatory medicine — known as P4 — will be enabled by systems biology. Both systems biology and P4 medicine are data driven and consequently require new tools for making large numbers of measurements rapidly, quantitatively and inexpensively. Microfluidics, chemistry and nanotechnologies will revolutionize our ability to generate comprehensive data sets on everything from individual cells to patients. These technologies will allow us to build multiparameter analysis tools — quantitating genes, proteins and cells — for in vitro cancer diagnosis and in vivo molecular imaging probes for spatially localizing specific cancers.

In his talk, Heath describes the state of the art in network models of human diseases and how those models could be harnessed to generate information for the clinical treatment of disease. He then describes a suite of *in vitro* and *in vivo* multiparameter diagnostics technologies that his laboratory is developing



James Heath

with other groups for both near- and far-term applications.

Heath is the Elizabeth W. Gilloon Professor of Chemistry at the California Institute of Technology, a professor of molecular and medical pharmacology at UCLA and director of the National Cancer Institute’s NanoSystems Biology Cancer Center. He received a Ph.D. in chemistry in 1988 from Rice University, where he was the principal student involved in the Nobel Prize-winning discovery of C60 and the fullerenes. He was a Miller Fellow at UC Berkeley from 1988-91, and from 1991-94 worked on the technical staff at IBM

Watson Labs.

In 1994 he joined the faculty at UCLA. He founded the California NanoSystems Institute in 2000 and served as its director until moving to Caltech. His group is applying its nano- and molecular-electronics work to cancer research. Heath has received a number of awards, including a Public Service Commendation from Gov. Grey Davis, the Feynman Prize, the Raymond and Beverly Sackler Prize in the Physical Sciences (Israel), and the Spiers Medal from the Royal Society (United Kingdom).

Heath’s lecture will be rebroadcast at 10 a.m., noon, 2, 4 and 8 p.m. Dec. 14 and 4 a.m. Dec. 15 on Lab TV Channel 2.



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